Date: Fri, 27 Aug 93 04:30:23 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #28
To: Ham-Ant

Ham-Ant Digest Fri, 27 Aug 93 Volume 93 : Issue 28

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 26 Aug 1993 12:11:22 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!gatech!concert!
quad.wfunet.wfu.edu!matthews@network.ucsd.edu
Subject: Excess coax to 2-meter mobile antenna
To: ham-ant@ucsd.edu

Berry Mobley (berry@kermit.csd.scarolina.edu) wrote:
: Hi. I've got a Larsen 2-meter mag mount antenna on my car.

: I've got about 10 feet of feedline left over that I don't know what
: to do with.

: I've currently got it coiled and taped to the underside of the trunk,
: but I'm worried that this coil might change the impedance, or otherwise
: degrade my signal.

: Should I make a larger coil, leave it like it is (about 10" diameter),
: or cut off the end and make the feedline shorter?

Not to worry. Since in coax the electromagnetic wave propagates
completely inside the coax, between the center conductor and shield,
you do not have to worry about making an RF choke. The only concern
is cable attenuation from the extra 10 feet, which is negligible.

Peoply often add a few turns of coax just before the feedpoint at HF
intentionally in order to choke off surface currents.

--
Rick Matthews   matthews@wfunet.wfu.edu
Wake Forest University   919-759-5340   (Voice)
Winston-Salem, NC 27109-7507   919-759-6142   (FAX)

Date: 25 Aug 93 16:19:00 GMT
From: ogicse!uwm.edu!cs.utexas.edu!TAMUTS.TAMU.EDU!bioch.tamu.edu!
whitsitt@network.ucsd.edu
Subject: Mininec3
To: ham-ant@ucsd.edu

I downloaded Mininec3 from the one of the Simtel mirrors because the description
of the program said something about antenna design. WELL.... I really have a
lot to learn about antennas and their design and I figured this program might
help me with this process... I still believe it might... if I only understood
the darn program. This program had no manual, only a short "hints on how to
use" file. I am more than only slightly befuddled by it.

Does anyone have the manual? Or can someone please explain the coordinate
system and the segments and the number of wires and all that stuff? I would
truly appreciate it.

Thanks

Mark S. Whitsitt, N5RJF   Texas A&M University, Dept of Biochemistry
Internet: mwhitsitt@tamu.edu   College Station, Tx. 77843-2128
AMPRnet: n5rjf@n5rjf.ampr.org   (409) 845-0832
Packet/APLINK: N5RJF @ KE5HE.TX.USA.NA

Date: Thu, 26 Aug 1993 10:33:51 GMT
From: swrinde!gatech!howland.reston.ans.net!darwin.sura.net!news.udel.edu!
brahms.udel.edu!penneys@network.ucsd.edu
Subject: Stacking vy low 40m & triband?
To: ham-ant@ucsd.edu

I live in a deed restricted community. For the moment, I am getting away
with a TA-33 triband atop a 40' crankup tiltover tower. There is about
7' of mast extending.

I wonder... if I put a little two element 40m beam up top, with about 7' height
over the triband, and rotated the two antennas 90 degrees apart if need be,
would this be worth doing? Two elements on 40 at about 47' and the TA-33 at
40'? Or, triband on top? Or....?

Tnx Bob WN3K   FRC

Date: 27 Aug 93 01:22:01 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: SWR Meters
To: ham-ant@ucsd.edu

Gary Coffman (gary@ke4zv.uucp) wrote:

: Now suppose the line is *not* terminated in a resistor of the line's
: characteristic impedance. Let's first look at two extreme cases. If
: the line is *open*, then current will be zero and voltage will be
: maximum, a very high impedance point. Note that the voltage and
: current are now out of phase by 90 degrees. When the voltage collapses,

Poppycock. The instantaneous net voltage and current on a line at any
point are the vector sum of the voltage and current of a forward and
a reverse travelling wave. For each of those two, the ratio of
voltage to current is the line impedance. If you do the measurement
at a single frequency, and if the line impedance is real (no reactive
component, purely resistive), the current and voltage will be
exactly in phase. If you could _truely_ open-circuit an end of the
line so there is _zero_ current there, then you can't say the voltage
and current are 90 degrees out of phase at that point, because the
current there is at all points in time _zero_. If there's a 90 degree
phase shift between voltage and current, it's because you have put a
purely reactive load at that point, not a true open circuit. Period.

==========

: Now this would all be pretty academic if we couldn't separate
: Vf and Vr so we could measure them. Various bridge type circuits
: can be used to separate the two wave components by taking advantage
: of non-reciprocal properties of the bridge circuit. We can also
: take advantage of the properties of travelling waves in the monimatch
: to do the same thing. It's difficult to show how to build a VSWR
: meter without drawings, so I'll refer you to the instrument on

: page 27-11 of The ARRL Antenna Book for a line section that will
: work at VHF/UHF and that can be made out of ordinary copper plumbing
: fixtures.

Gary earlier in the posting noted that an SWR bridge measures VSWR or
ISWR rather than SWR. I take some issue with this. I claim that
almost all bridges that are physically a small fraction of a wavelength
make their measurement by ratioing current and voltage at a point in
the line; a true VSWR meter would measure the RMS voltage at at least
two places on the line (separated, for example, by 1/4 wavelength in
the line), but this is NOT the way these meters work. Whether the
voltage is measured with a transformer, a capacitive divider, or a
resistive divider, it's the voltage at a _single_ point in the line.
And at that same point, the current is measured, with a current
transformer, the voltage drop through a resistor, or as an inductive
pickup that's also a capacitive pickup monitoring the voltage:
that is, the parallel wire.

A forward wave will have v/i=z, where i is measured as positive if
flowing toward the load; a reverse wave will have v/i=z, where i is
measured as positive is flowing away from the load. The SWR meter
works by expecting v-iz=0 for i measured positive toward the load;
built in to the meter is an assumption about z! The meter does NOT
know the z of the line you are measuring, so if you use a 50 ohm
meter on a 75 ohm matched line, it will tell you incorrectly that
the line has an SWR greater than 1:1.

If you want more math details of how the meter works, I could be talked
into providing them.

73, K7ITM

Date: 27 Aug 93 04:16:34 GMT
From: ogicse!uwm.edu!cs.utexas.edu!sdd.hp.com!col.hp.com!bobw@network.ucsd.edu
Subject: SWR Meters
To: ham-ant@ucsd.edu

alanb@sr.hp.com (Alan Bloom) writes:
> "Eleen N. Kamas" (ee2g+@andrew.cmu.edu) wrote:
> :
> :   I have a SWR meter that was designed to be used for HF frequencies.
> : Is it possible to modify it to work on 2 meters?
> :
> Try it! I have found that many of the cheap SWR meters work passable
> well on 2 meters as-is. If it reads close to 1:1 into a good 50-ohm load,
> and reads infinity into an open circuit, then it is probably usable.

>
> AL N1AL
>
  I'm glad someone else was thinking that, Al. I have this friend who
  has a passion for designing and building direction couplers / SWR meters.
  (He also holds a patent relating to automatic measurement of SWR.)
  Anyway, over the years he has tested many of the so-called
  "HF" SWR meters and he has always been surprised at how many of them
  work just fine at 146 MHz. (My guess is that things change dramatically
  at UHF, though.)

  By the way, I nuked the response to all the groups except
  rec.radio.amateur.antenna. Seems like thats where this discussion
  belongs. Net bandwidth and all that.

Bob Witte / HP PMO (Colo Springs) / bobw@col.hp.com / KB0CY / (719) 590-3230

Date: 26 Aug 1993 13:30:03 GMT
From: nntp.ucsb.edu!mustang.mst6.lanl.gov!nntp-server.caltech.edu!
news.claremont.edu!ucivax!news.service.uci.edu!usc!howland.reston.ans.net!gatech!
concert!quad.wfunet.wfu.edu!matthews@network.ucsd
Subject: WANTED- Directional FM Broadcast-band antenna
To: ham-ant@ucsd.edu

Peggy, The Foul-Mouthed Chambermaid (jlindqui@ux4.cso.uiuc.edu) wrote:
: Hey there...
: I know this group is dedicated to amateur radio, but I'm in a bit of a bind
: and need the benefit of someone else's antenna expertise. I'm in Urbana,
: IL, and need to pull in one of the FM stations from Chicago, on 97.9 MHz.
: To pull this one off, I'll be needing a good directional antenna. Its only
: constraint is that it needs to be small. I haven't the space to put a 20'
: x 10' array up anywhere. I may have to hang it out my window, or possibly
: hang it from the ceiling of my dorm room (It faces north)

: Any help anyone has to offer would be greatly appreciated...

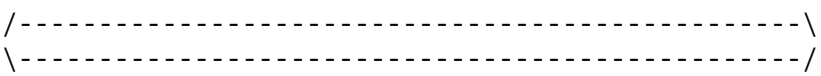
: ---
: Jason A. Lindquist   .sig unavailable
: linky@uiuc.edu   'till system upgrade complete...

We would all like a good, small, directional antenna. Generally
"good" and "directional" mean "big", but at 97.9 MHz you've got a
chance of doing pretty well.

I would suggest an antenna design called a "yagi" tacked to your
ceiling. It will come in three pieces, only one of which is attached

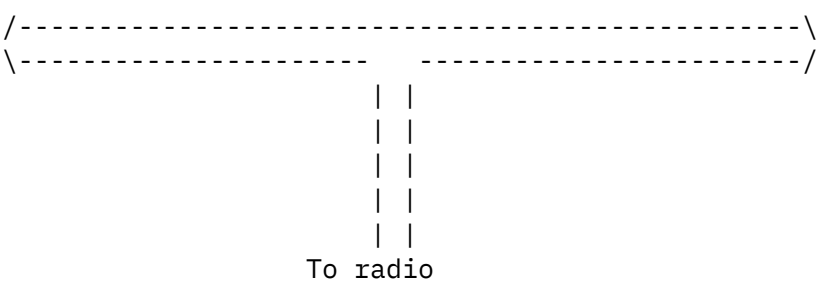
to your radio.

The middle piece is called the driven element and is made from 300 ohm twin-lead, the TV antenna wire that looks like a ribbon. If you have or wish to buy an "FM dipole" antenna, you can use that for the driven element. One may have come with your radio, and they are probably available at stereo stores or Radio Shack. Otherwise, you can make your own as follows. Buy a roll of twin lead from Radio Shack. Cut a piece of twin lead that will end up being about 97% of a half wave-length, or 148.6 cm. Strip a little of the insulation off the two wires at one end so that the two conductors can be joined. Twist the two conductors together and solder. You now have a piece of twin-lead 148.6 cm long with the conductors joined at each end:



This is called a folded dipole, or simply a dipole. Now you need to connect it to your radio.

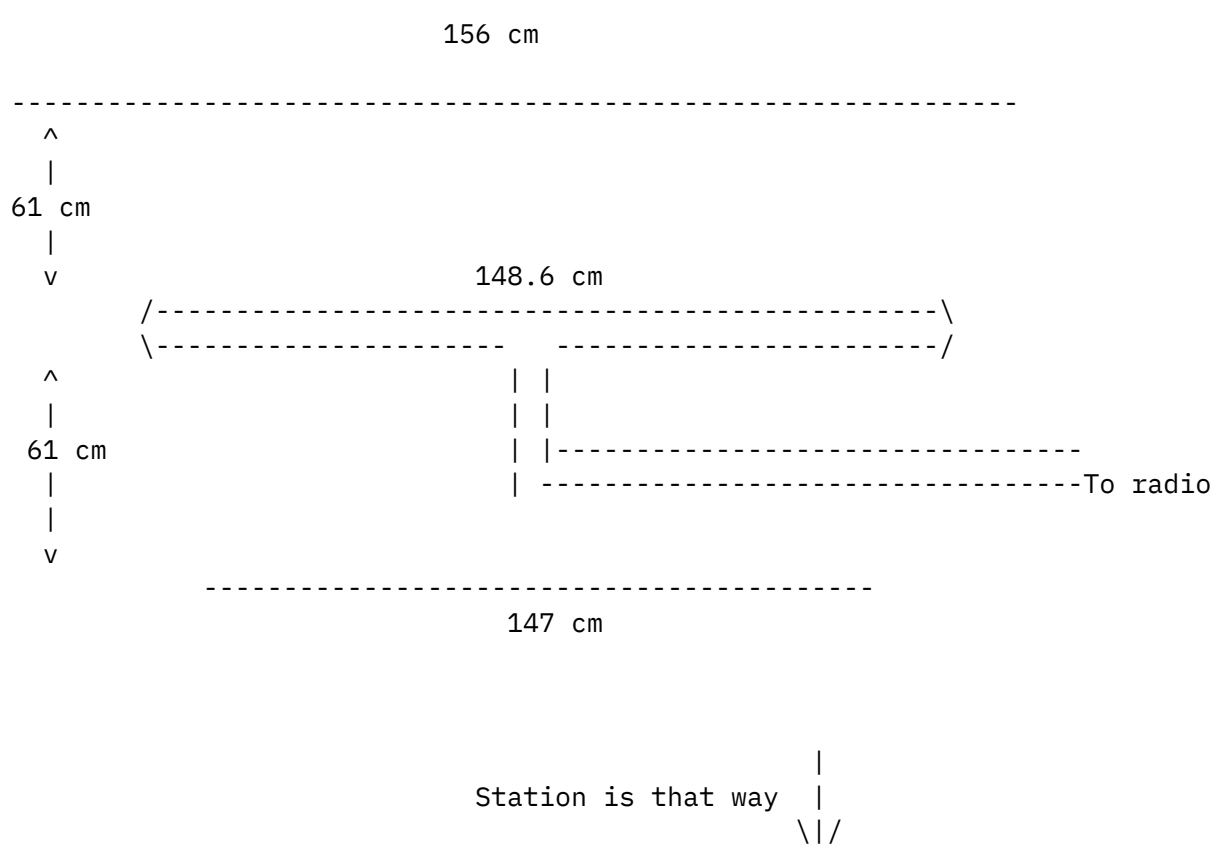
Find the exact mid-point of your dipole, cut ONE of the two conductors, strip off about 3/8" of insulation from each piece of the cut conductor. Do the same to the end of your roll of twin-lead. Now join the the end of the roll you prepared to the conductor pieces you cut at the center of your dipole, and solder if possible. Your antenna now looks like this.



The twin lead to your radio can be any length, but do NOT coil up the excess, and spread any excess as much as possible. Cut off what you know will not be needed.

You may want to try this out before doing anything else. Tack it to your ceiling or wall, orienting it broadside to the station. This may be good enough. If not, you can add one or two straight wires, unconnected to the first or to your radio, that will improve reception.

Place the dipole close to the middle of your ceiling, oriented for best reception. Add a straight wire about 156 cm long parallel to your dipole and 61 cm from it on the far side from the station. If your reception is still not good enough and you have room, add another straight wire parallel to the dipole, about 147 cm long, and placed 61 cm from it in the direction of the station. Your final antenna looks something like this, all tacked or taped to your ceiling:



Please let me know how it works.
WA4GSP

P.S. to other readers: I am assuming the 97% of a half-wave figure for the driven element works pretty well with folded dipoles, as it does with simple dipoles. Anyone choose to correct me?

--
Rick Matthews   matthews@wfunet.wfu.edu
Wake Forest University   919-759-5340   (Voice)

Winston-Salem, NC 27109-7507 919-759-6142 (FAX)

End of Ham-Ant Digest V93 #28
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